SERVICE MANUAL

AUDIO VIDEO STEREO RECEIVER

SANSUI S-X1130/X1100

(Silver & Black Model)

CAUTION

1. Parts identified by the ⚠ symbol on the schematic diagram and the parts list are critical for safety. Use only replacement parts that have critical characteristics recommended by the manufacturer.
2. Make leakage-current or resistance measurements to determine that exposed parts are acceptably insulated from the supply circuit before returning the appliance to the customer.

Sansui

SANSUI ELECTRIC CO., LTD.

•SPECIFICATIONS

Audio section

Power output
Min. RMS, both channels driven, from 20 to 20,000 Hz, with no more than 0.005% total harmonic distortion.
130 watts per channel into 8 ohms
Load impedance ..... 8 ohms
Total harmonic distortion
from POWER AMP IN ..... less than 0.005% at or below rated min. RMS power output
Frequency response (at 1 watt)
from POWER AMP IN ..... 5 to 180,000 Hz, +0 dB, —3.0 dB
RIAA curve deviation (PHONO MM, 20 Hz to 20 kHz) ..... +0.2 dB, —0.2 dB
Input sensitivity and impedance (at 1 kHz)
PHONO (MC) ..... 250 μV/100 ohms
PHONO (MM) ..... 2.5 mV/47 kohms
TAPE PLAY, AUX/DA, ... 150 mV/47 kohms
VIDEO AUDIO IN ..... 150 mV/47 kohms (S-X1100)
MIC ..... 2.5 mV/10 kohms
Output level (at 1 kHz)
TAPE REC ..... 150 mV into 47 kohms
PREAMP OUT ..... 1,000 mV in to 47 kohms
Signal to noise ratio (short-circuit, A-network)
PHONO (MC) ..... 65 dB
PHONO (MM) ..... 85 dB
TAPE PLAY, AUX/DA ..... 95 dB (S-X1130)
TAPE PLAY, AUX/DA ..... 90 dB (S-X1100)
VIDEO AUDIO IN ..... 90 dB (S-X1100)

Video section (S-X1130 only)
VIDEO INPUT sensitivity (Impedance) ..... 1.0 Vp-p/75 ohms
VIDEO OUTPUT level/Impedance ..... 1.0 Vp-p/75 ohms
AUDIO INPUT sensitivity (Impedance) ..... —6 dBs/47 kohms
AUDIO OUTPUT level/Impedance ..... —6 dBs/47 kohms
VHF OUT signal ..... 3 ch or 4 ch (NTSC)

FM section
Tuning range ..... 88 to 108 MHz
Usable sensitivity
Mono ..... 10.3 dBf/Stereo ..... 19 dBf
50 dB quieting sensitivity
Mono ..... 14 dBf/Stereo ..... 37 dBf
Signal to noise ratio (at 65 dBf)
Mono ..... 80 dB/Stereo ..... 76 dB
Distortion (at 65 dBf WIDE)
Mono ..... less than 0.03% at 1,000 Hz (S-X1130)
Stereo ..... less than 0.05% at 1,000 Hz (S-X1130)
Mono ..... less than 0.1% at 1,000 Hz (S-X1100)
Stereo ..... less than 0.15% at 1,000 Hz (S-X1100)
Alternate channel selectivity (at 400 kHz)
NARROW ..... 60 dB
Capture ratio ..... 1.0 dB
Spurious response ratio ..... 90 dB
IF response ratio ..... 90 dB
Stereo separation ..... 45 dB at 1,000 Hz
Frequency response ..... 30 to 15,000 Hz, +0.2 dB, —0.5 dB
Antenna input impedance ..... 300 ohms balanced
75 ohms unbalanced

AM section
Tuning range ..... 530 to 1,600 kHz
Usable sensitivity
Mono ..... 49 dB/m
Selectivity ..... 30 dB
Signal to noise ratio
Mono ..... 50 dB
Distortion (at 30% Modulation, 80 dB/m)/Mono ... less than 0.5%

Others
Power requirements
Power voltage ..... 120, 220, 240 V, (50/60 Hz)
For U.S.A. and Canada ..... 120 V (60 Hz)

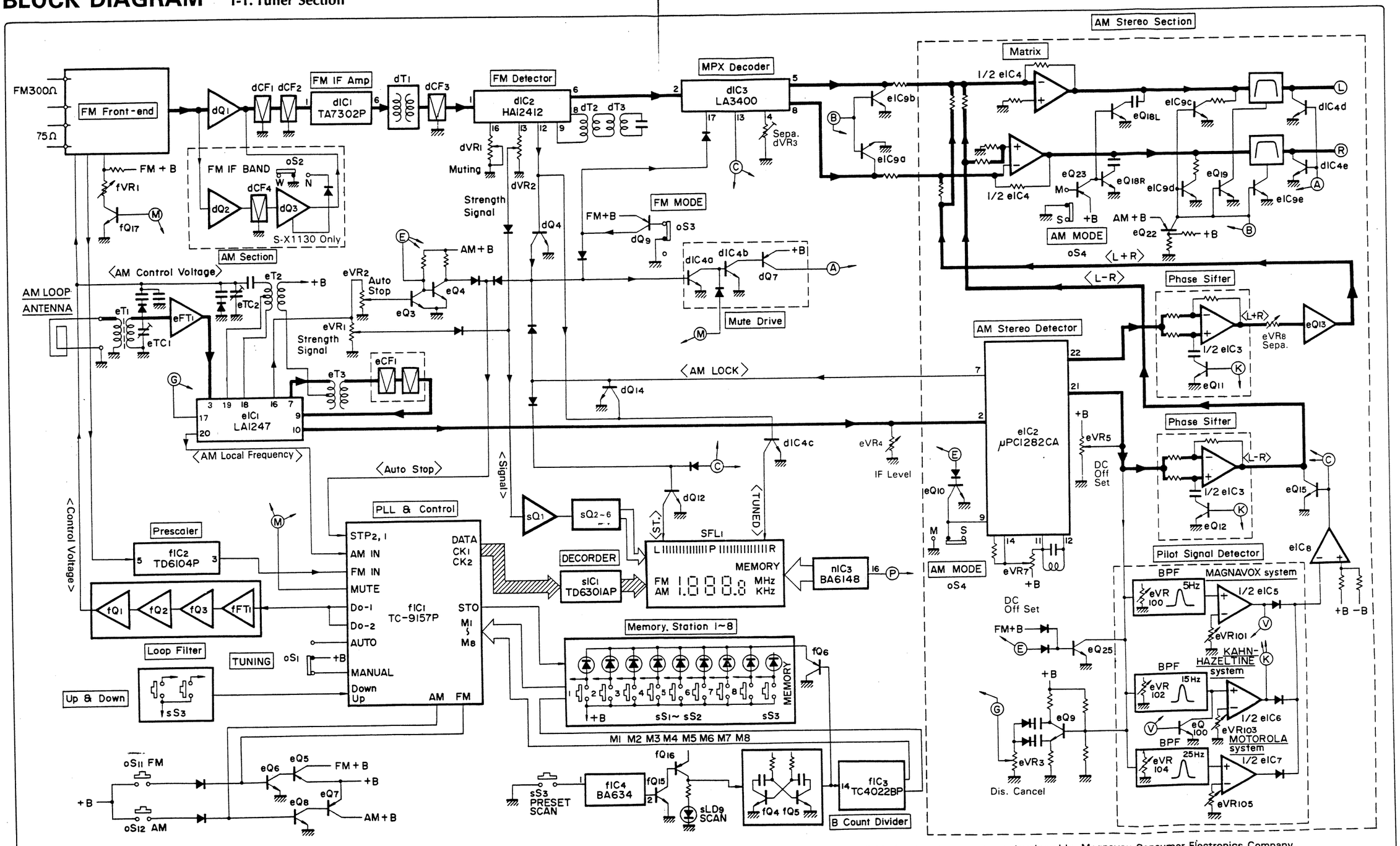
<S-X1130>
Power consumption ..... 450 watts 530 VA Rated
Dimensions ..... 430 mm (16-15/16″) W
161 mm (6-3/8″) H
421 mm (16-5/8″) D
Weight ..... 16.3 kg (35.9 lbs.) net
18.0 kg (39.7 lbs.) packed

<S-X1100>
Power consumption ..... 370 watts 430 VA Rated
Dimensions ..... 430 mm (16-15/16″) W
161 mm (6-3/8″) H
421 mm (16-5/8″) D
Weight ..... 14.7 kg (32.4 lbs.) net
16.4 kg (36.2 lbs.) packed

* Design and specifications subject to changes without notice for improvements.

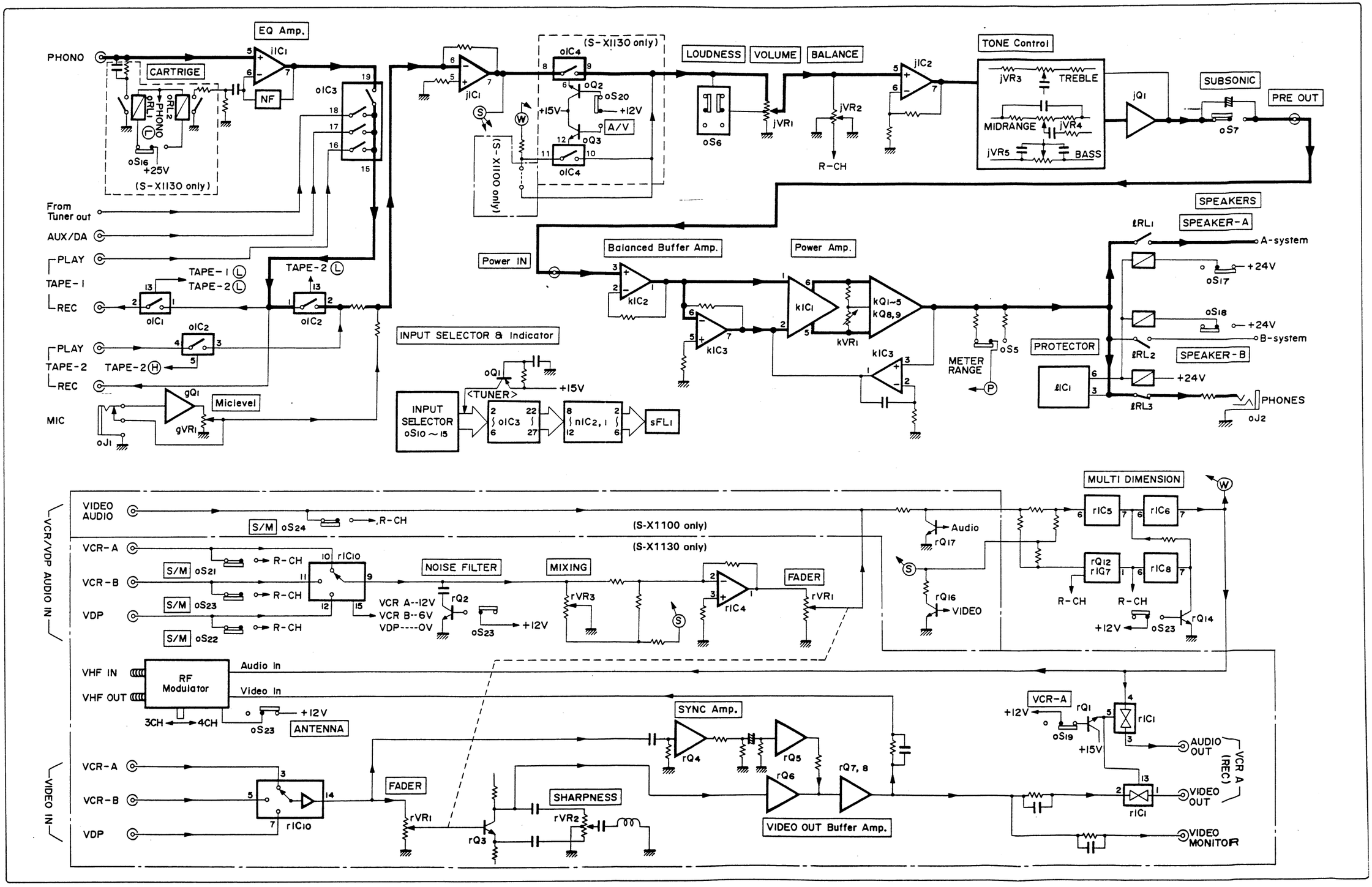
1. BLOCK DIAGRAM

1-1. Tuner Section



1. **MAGNAVOX system:** Available for AM stereo systems developed by Magnavox Consumer Electronics Company.
2. **KAHN-HAZELTINE system:** Available for AM stereo systems developed by Kahn Communications Inc. and Hazeltine Corporation.
3. **MOTOROLA system:** Available for AM stereo systems developed by Motorola Inc.
4. **HARRIS system:** Available for AM stereo systems developed by Harris Corporation.

1-2. Audio & Video Section



2. ADJUSTMENTS

2-1. FM Adjustment (See Parts Location F-4741 on Page 12)

Note: 1. SELECTOR ..... FM
2. FM MUTING/MODE ..... OFF/MONO
3. FM IF BAND ..... WIDE (S-X1130 only)

Fig. 2-1

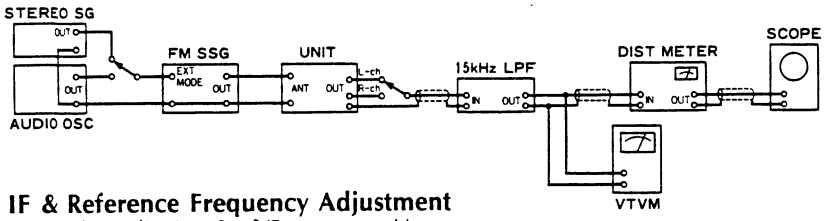
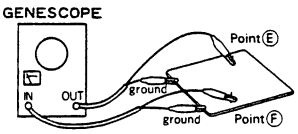
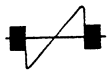


Fig. 2-2



1) FM IF & Reference Frequency Adjustment

Note: 1. Before adjusting, Set fVR_1 center position.

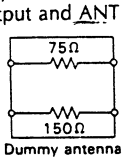
STEP	SUBJECT		FEED SIGNAL FROM	FEED SIGNAL TO	MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
1.	Reference Frequency Adj.		No Input	——	Between Point Ⓐ (Pin 24 of fIC1) & Earth Freq. counter (F-4742)	fTC1 (F-4742)	25 kHz	•Short between Point Ⓑ & Point Ⓒ (Pin 36 & 42 of fIC1) (F-4742)
2.	IF Coil Adj.		98MHz ANT Input 20dBf (14.8dB), 1kHz (100% MOD.), FM SSG	ANT terminal 300Ω	Between Point Ⓓ (Pin 13 of dIC2) & Earth DC Volt Meter	IFT Coil (Front-end) & dT1 (F-4741)	Max. DC Volt	
3.	Discriminator Coil Adj. In case of using Genescope	1	No Input	——	Between TP_1 & TP_2 (near dIC_2) DC Volt Meter	dT2 (F-4741)	DC 0V±30mV	•Repeat procedures as stated in subject 1 & 2. •Confirm that lock Indicator turns ON
		2	Output 80dB, Genescope	Point Ⓔ (dR_{11})	Between Point Ⓕ (jW48) & Earth	dT3, dT1 (F-4741)	Steep linearity of S curve. Make symmetrical S curve.	
	Discriminator Coil Adj. In case of using Dist meter	1	No Input	——	Between TP_1 & TP_2 (near dIC_2) DC Volt Meter	dT2 (F-4741)	DC 0V±30mV	•Repeat procedures as stated in subject 1 & 2. •Since the dT1 has already adjusted, perform only a fine adjustment in this procedure. •Confirm that lock indicator turns ON
		2	98MHz ANT Input 65dBf (59.8dB), 1kHz (100% MOD.), FM SSG	ANT terminal 300Ω	•REC OUT L-CH or R-CH VTVM & SCOPE	dT3, dT1 (F-4741)	Min. THD	
4.	Signal Level Adj.		98MHz ANT Input 65dBf (59.8dB), 1kHz (100% MOD.), FM SSG	Same as above	•Signal Ind. (sFL_1)	dVR2 (F-4741)	5 indicator light up.	

•ADJUSTMENT FOR FM

There are two kind in indication of FM SSG output attenuator
1. Attenuator with marking of 75Ω open ..... open indication type.
2. Attenuator with marking of 75Ω load or close ..... load or close indication type.

FM SG output level in this FM adjustment are described as open indication type.
To feed FM signal, a dummy antenna circuit as Fig. 2-1 must be connected between FM SG output and ANT terminal (300Ω) of the unit.

Fig. 2-3



Dummy antenna

- The following table shows relations among FM SG attenuator indication (dB), available power ratio (dBf) and antenna terminal voltage (dB/μV) in each indication type.

	FM SG Attenuator Indication	Available Power Ratio	Antenna Terminal Voltage
Open indication type	0 dB 66 dB	−0.8 dBf 65.2 dBf	−6 dB/μV 60 dB/μV
Load or close indication type	0 dB 60 dB	5.2 dBf 65.2 dBf	0 dB/μV 60 dB/μV

2) FM STEREO Adjustment

1. FM MODE.....AUTO

STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	Auto Stop Level Adj.	98MHz ANT Input 35dBf (29.8dB) 1kHz (100% MOD.), FM SSG	ANT Terminal 300Ω	Digital display	dVR1 (F-4741)	Tune the tuner to 98MHz by using the automatic search tuning operation.	•Perform the automatic search tuning operation by depressing the TUNING button.
2.	Separation Adj. (WIDE band)	98MHz ANT Input 65 dBf (59.8dB), FM SSG, Pilot 19 kHz (9% MOD.) R MODE 1kHz+Pilot (100% MOD.), STEREO SG.	Same as above	TAPE-2 REC L-CH VTVM & SCOPE	dVR3 (F-4741)	Indication on VTVM min. (Separation max.)	

2-2. AM Adjustment (See Parts Location F-4741 on Page 12)

Fig. 2-4

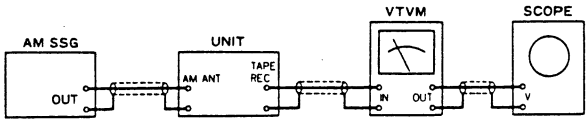
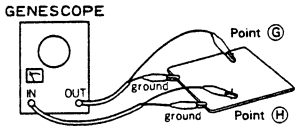


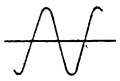
Fig. 2-5



Note: 1. SELECTOR.....AM
S.V.R. set position
•eVR3.....fully clockwise
•eVR4.....fully counter clock wise

1) AM IF Adjustment & Tuning Adjustment

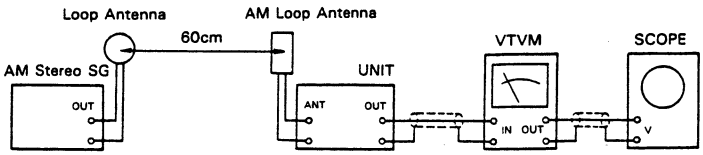
Note: 1. Connect AM loop antenna to AM antenna terminal

STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	iF Coil Adj.	Genescope Output 60dB	Point Ⓒ (eR19) (F-4741)	Between Point Ⓗ (JW1) & Earth (F-4741)	eT3 (F-4741)	Max, Waveform	
2.	522kHz (or 520kHz) Tuning Adj.	No Input	——	Between Point Ⓘ (eR5) & Earth (F-4741) DC Volt Meter	eT2 (F-4741)	1.3V±0.1V	•Repeat procedures as stated in subject 2 & 3.
3.	1602kHz (or 1610kHz) Tuning Adj.	No Input	——	Same as above	eTC2 (F-4741)	20V±0.5V	
4.	603kHz (or 600kHz) RF Adj.	603kHz (or 600kHz) ANT Input 30dB 400Hz (30% MOD.), AM SSG	ANT terminal	TAPE-2 REC L-CH or R-CH VTVM & SCOPE	eT1 (F-4741)	Max. Output	
5.	1404kHz (or 1400kHz) RF Adj.	1404kHz (or 1404kHz) ANT Input 30dB 400Hz (30% MOD.), AM SSG	Same as above	Same as above	eTC1 (F-4741)	Max Output	
6.	Signal Level Adj.	999kHz (or 1000kHz) ANT Input 68dB 400Hz (30% MOD.), AM SSG	Same as above	Signal Ind. (sFL1)	eVR1 (F-4741)	5 Indicator light up.	
7.	Auto Stop Level	999kHz (or 1000kHz) ANT Input 65dB 400Hz (30% MOD.), AM SSG	Same as above	Digital Display (sFL1)	eVR2 (F-4741)	Tune the tuner to 999 (or 1000kHz) kHz by using the automatic search tuning operation.	

2) AM STEREO Adjustment (See Parts Location F-4741 on Page 12 & F-4740 on Page 11)

Note: 1. MODE..... STEREO
2. This adjustment needs AM Stereo SG.
3. Setting of AM Stereo SG
•MODE Frequency..... 400Hz
•Main Channel MODE..... 30%

Fig. 2-6



STEP	SUBJECT		FEED SIGNAL FROM	FEED SIGNAL TO	MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
1.	Off set Adj.	1	No Input	———	Between TP6 (Pin 11 of eIC2) & TP8 (Pin 13 of eIC2) DC Volt Meter	eVR5 (F-4741)	DC 0mV±10mV	SELECTOR.....FM, this step only.
		2	1000kHz 80 dB R=L MODE AM STEREO SG	ANT terminal	Same as above	eT5 (F-4741)	DC 100mV±10mV	<MOTOROLA system>
		3	Same as above	Same as above	Between TP5 (Pin 21 on eIC2) & Earth. DC Volt Meter	eVR7 (F-4741)	Mini indicator on VTVM	
2.	25Hz Filter Adj. & Stereo Ind. Level Adj.	1	1000kHz ANT Input 80 dB L MODE Pilot 25Hz 2.5% AM Stereo SG	Same as above	Between Point Ⓙ (eR123) & Earth (F-4740) SCOPE	*eVR104 F-4740	Max. 25Hz Signal level	<MOTOROLA system> •SYSTEM SELECT (AM Stereo SG) .....C-QUAM
		2	Same as above	Same as above	Between Point Ⓚ (Pin 7 of eIC7) & Earth (F-4740) DC Volt Meter	eVR105 F-4740	High level (DC1.4V) comes out	
3.	5Hz Filter Adj. & Stereo Ind. Level Adj.	1	1000kHz ANT Input 80dB L MODE Pilot 5Hz 2.0 radian AM Stereo SG	Same as above	Between Point Ⓛ (eR107) & Earth (F-4740) SCOPE	*eVR100 F-4740	Max. 5Hz Signal level	<MAGNAVOX system> •SYSTEM SELECT (AM Stereo SG) .....AM-PM
		2	Same as above	Same as above	Between Point Ⓜ (Pin 7 of eIC5) & Earth (F-4740) DC Volt Meter	eVR101 F-4740	High level (DC1.4V) comes out	
4.	15Hz Filter Adj. & Stereo Ind. Level Adj.	1	1000kHz ANT Input 80 dB L MODE Pilot 15Hz 3° AM Stereo SG	Same as above	Between Point Ⓝ (eR114) & Earth (F-4740) SCOPE	*eVR102 F-4740	Max. 15Hz Signal level	<KAHN-HAZELTINE system> •SYSTEM SELECT (AM Stereo SG) 1SB
		2	Same as above	Same as above	Between Point Ⓟ (Pin 7 of eIC6) & Earth (F-4740) DC Volt Meter	eVR103 F-4740	High level (DC1.4V) comes out	
5.	Separation Adj.		Same as above	Same as above	TAPE-2 REC R-CH VTVM & Scope	eVR8 (F-4741)	Mini Indication on VTVM	

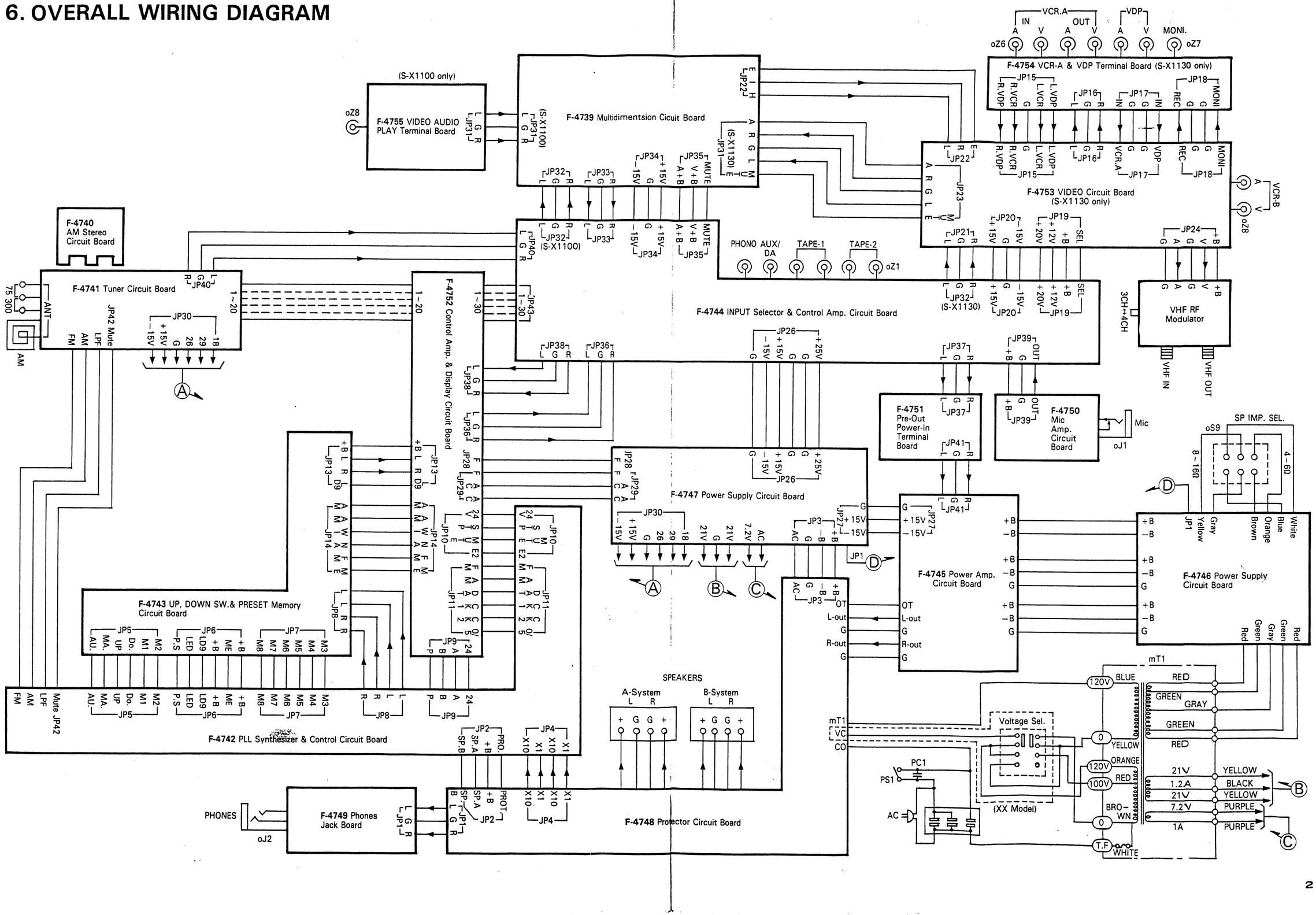
***Note:** Be careful not revolve over eVR100, eVR102, eVR104, or it will dispatch.

2-3. Driver Circuit Adjustment (See Top View on Page 20)

Note: 1. Room Temperature..... 18°C~28°C
2. Master Volume..... Minimum
3. For this adjustment, run the unit for more than 2 minutes after the power is switched ON.

STEP	SUBJECT	MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
1.	Bias Current Adj. L-CH	Between emitter terminals of kQ8L and kQ9L (TP1) (F-4745) DC Volt Meter	kVR1L (F-4745)	DC 3.5mV±1.5mV	•Before turning ON power switch, turn kVR1L, R counterclockwise. •This bias current value into voltage voltage by ohms law.
2.	Bias Current Adj. R-CH	Between emitter terminals of kQ8R and kQ9R (TP2) (F-4745) DC Volt Meter	kVR1R (F-4745)		

6. OVERALL WIRING DIAGRAM



7. SCHEMATIC DIAGRAM

7-1. EQ Amp. & Control Amp. Section

- Design and specifications subject to change without notice for improvement.
- La présention et les spécifications sont susceptibles d'être modifiées sans préavis par suites d'améliorations éventuelles.
- Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.

SYMBOL OF FUNCTION
(d) FM
(e) AM
(f) OSC
(g) MIC
(i) EQ
(j) CONTROL
(k) POWER AMP
(ℓ) PROTECTOR
(m) POWER SUPPLY
(n) INDICATOR
(o) SELECTOR
(p) FIXED PARTS
(s) RF INDICATOR

SYMBOL
C Ceramic
(ℓP) Bi-Polar Electrolytic
Mylar
Polystyrene
Non. Inflammable
Cement Resistor
Low-Leak Electrolytic
JW Jumper Wire

RESISTORS
All resistors are rated at 1/4 Watts ± 5%
Tolerance Unless Otherwise Noted k = kΩ, M = MΩ

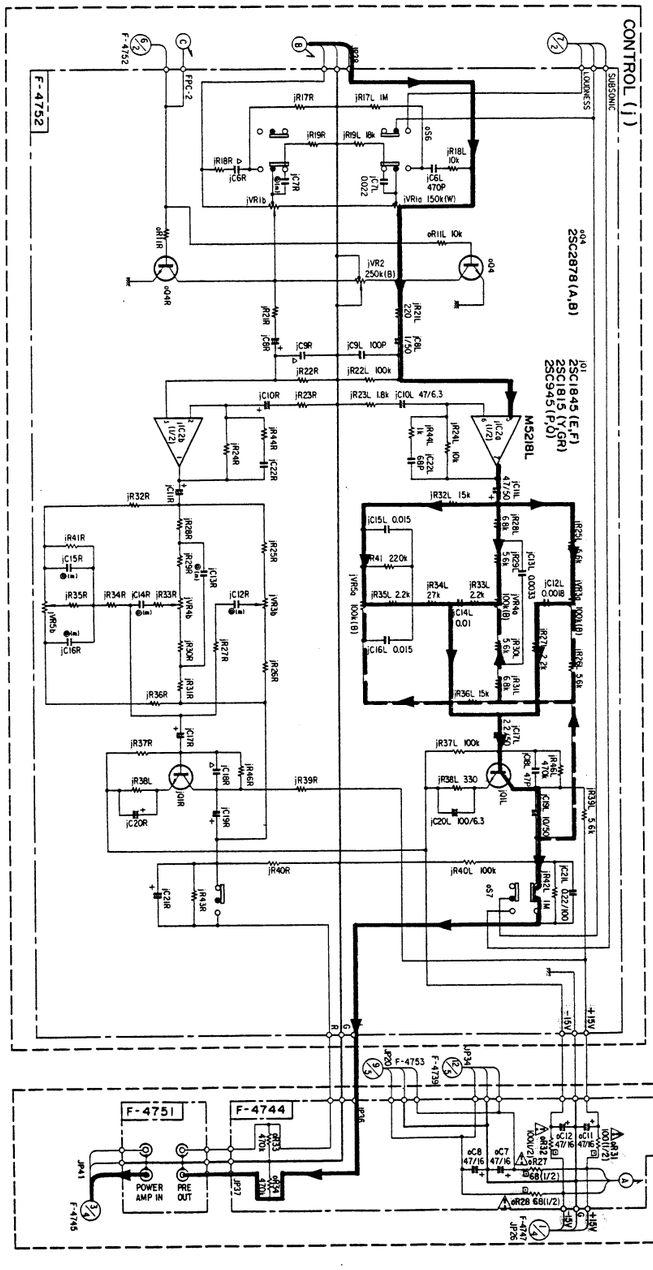
CAPACITORS
All capacitors are rated at 50 Volts Otherwise Noted P = pF

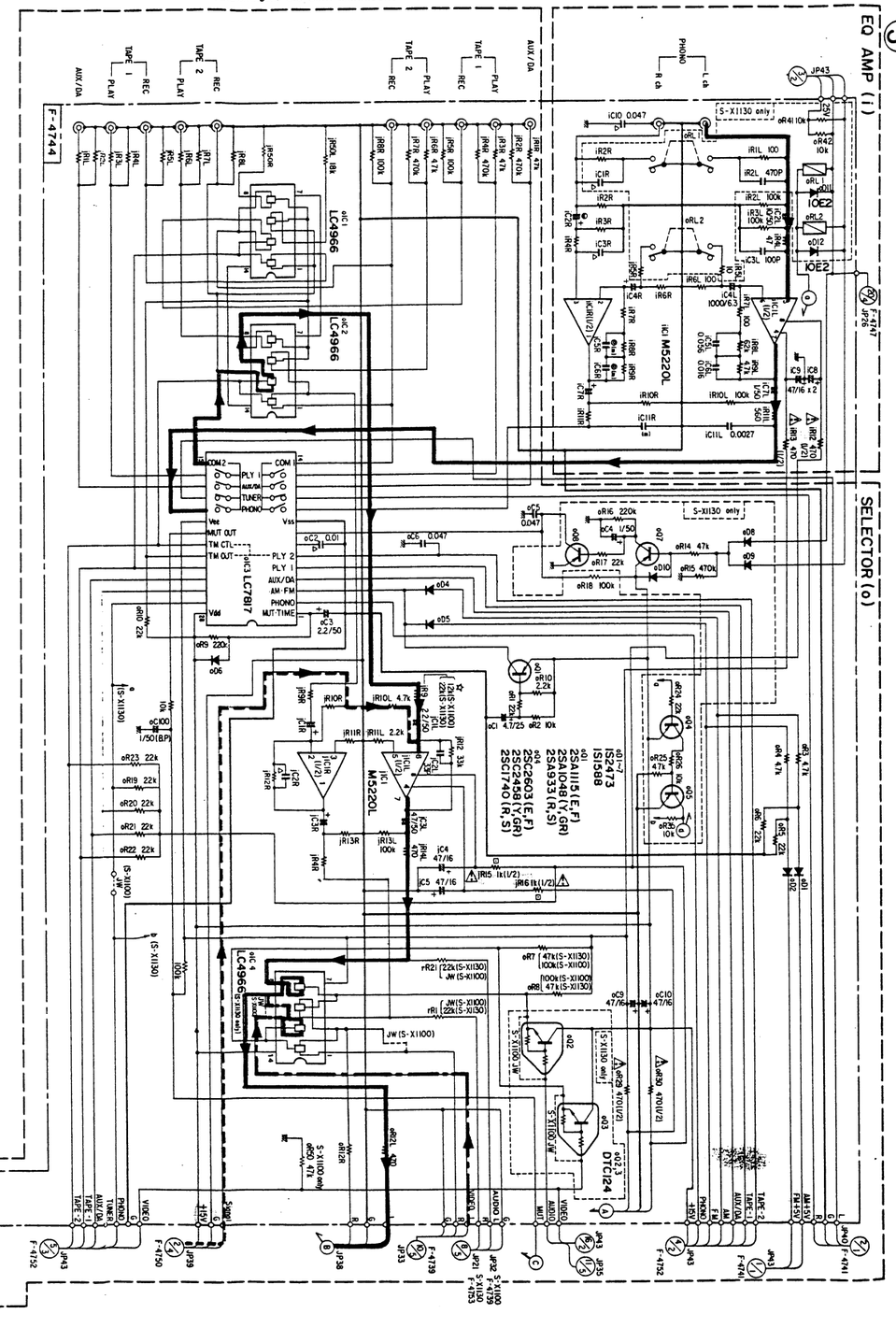
Electrolytic Capacitor: Capacitance(μF)/Volt(V)

Each DC Voltage shows the normal value in volts at no input signal.

⚠ is Safety Part.
Use only replacement parts recommended by the manufacturer.

Signal Line
N.F.B. Line
VCR/VDP Audio Signal Line
Mic Signal Line





2SA1145 2SC945 2SC1674 2SC1740S 2SC1815 2SC2705 2SC2878
2SA1207 2SC2909
2SD358
2SA933S 2SC2786 DTC124
2SD313AL 2SD880
2SA1048 2SA1115 2SC2458 2SC2603
2SA1111 2SA1112 2SA1306 2SC2591 2SC2591 2SC2592 2SC3298
2SB528
2SC2773 2SC2774
TA7302P
M5236C M5278L56
2SA1169 2SA1170
BA634
L78N09 L78N12 L78N15
TD6104P
TA7317P
DT5C144E
M5218L M5220L
μPC1282CA LC7817
BA-6148 M51321P
HA12412 TC4022BP
LA1247 TC9157AP
LA3400 TC9157P
LC4966 TD6301AP
MV103
Dot or Slit or Line
CTM-22S
STK3122-3 STK3152-3
CTM-22R
05Z2.4-X 05Z5.1-Y 05Z20-Y 05Z24-Y 05Z24-Z
FCC66M KV1226
2SK192A-GR 2SK192A-Y
SEL2210S TLS-123
2SK117-GR 2SK117-Y 2SK163-K2 2SK163-L1
1N60PSP 1S1588TP-3 1S2473T77 10E-2 0A90M
TA78

7-2. Power Amp., Power Supply Section

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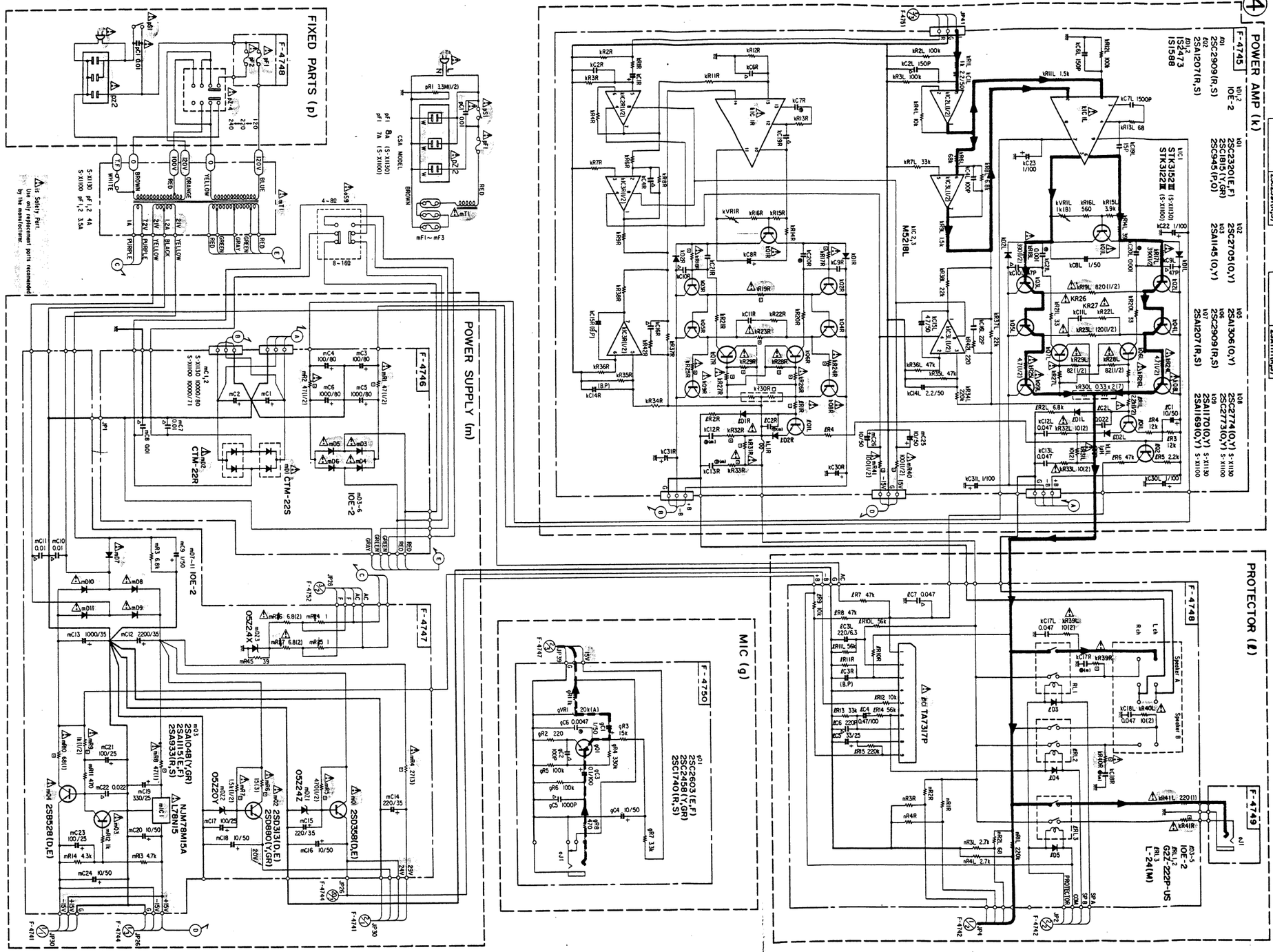

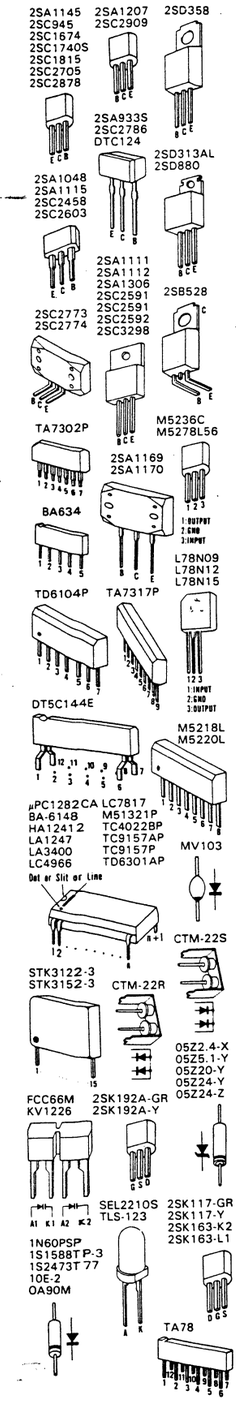

A B C D E F G H

7-3. Tuner Section

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SYMBOL
- △ Ceramic
- (B.P) Bi-Polar Electrolytic
- ●(m) Mylar
- ⊡ Non-inflammable
- ■ Polystyrene

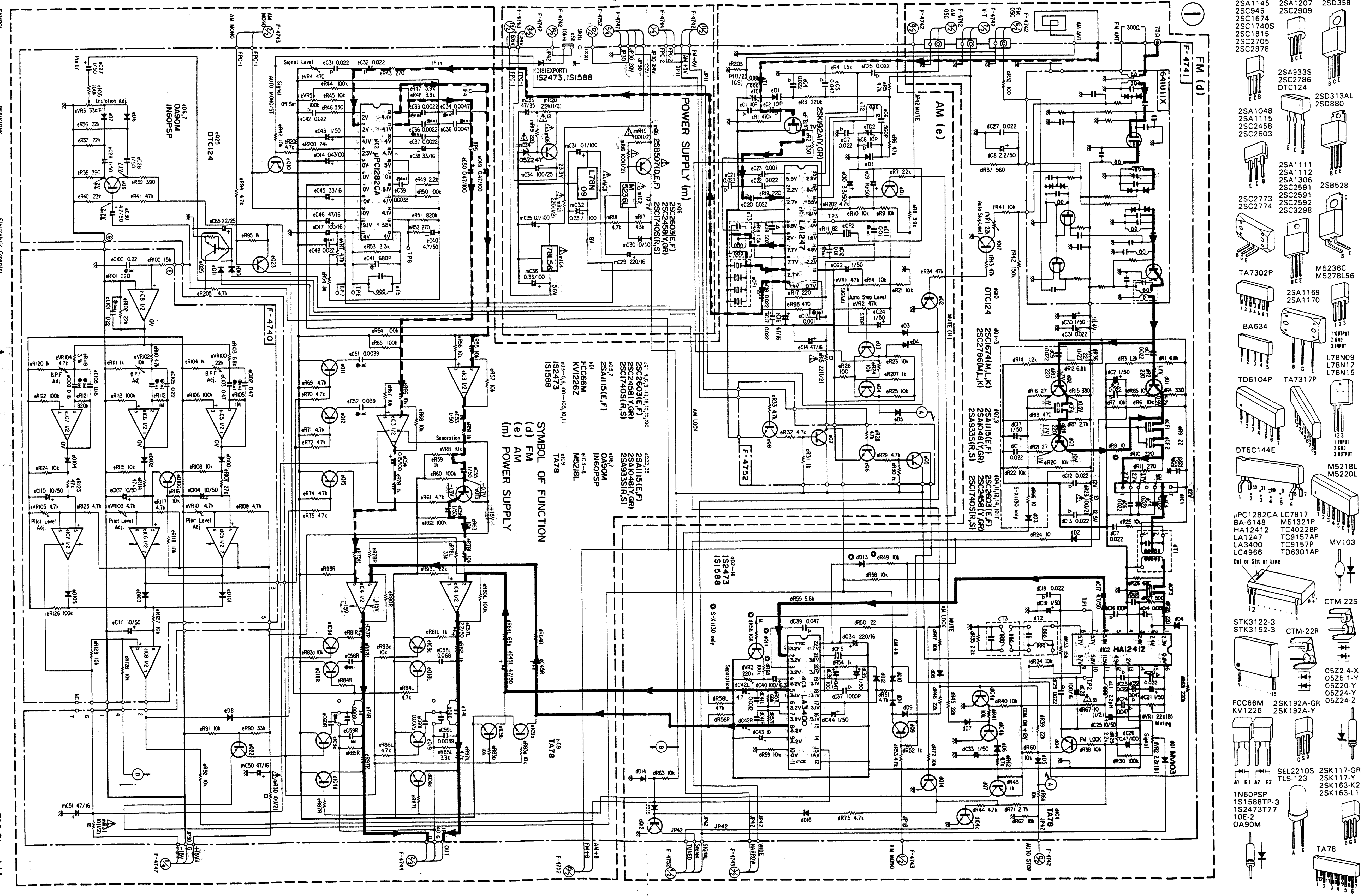
RESISTORS
Are in ohms, 1/4 Watts, ±5%
Tolerance Unless Otherwise Noted. k: kΩ, M: MΩ

CAPACITORS
Are in μF, Unless Otherwise Noted.
P: pF

Electrolytic Capacitor:
Capacitance (μF) / Volt (V)

Each DC Voltage shows the nominal value in volts at no input signal.

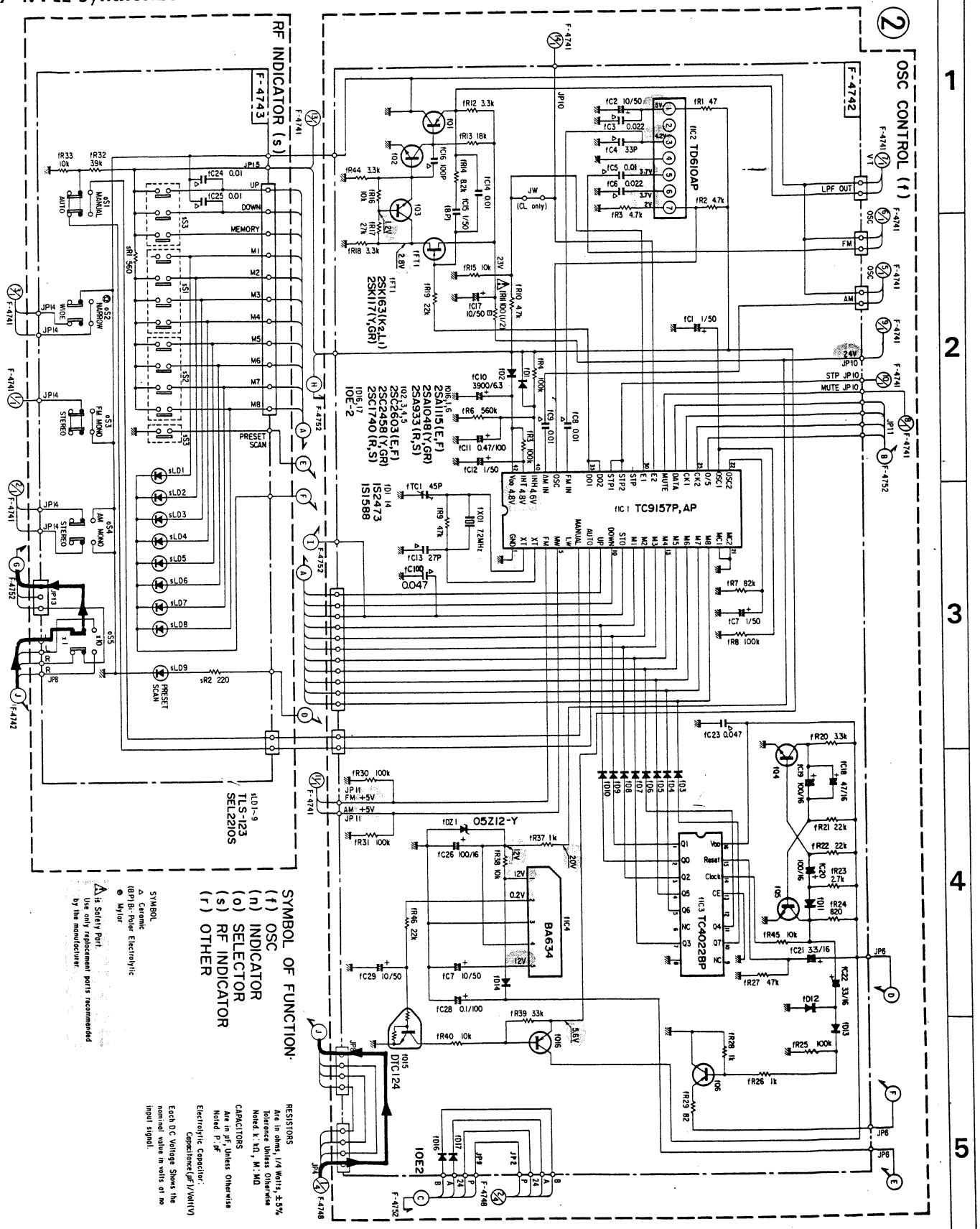
⚠ is Safety Part.
Use only replacement parts recommended by the manufacturer.



SYMBOL OF FUNCTION
(d) FM
(e) AM
(m) POWER SUPPLY
POWER SUPPLY (m)
AM (e)
FM (d)
μPC1282CA
LA1247
LA3400
HA12412
L78N09
M5236L
78L56
2SK192A(Y,GR)
2SB507(D,E,F)
DTC124
F-4740
F-4741
F-4752
S-X1130 only
2SA1145 2SC945 2SC1674 2SC1740S 2SC1815 2SC2705 2SC2878
2SA1207 2SC2909
2SD358
2SA933S 2SC2786 DTC124
2SD313AL 2SD880
2SA1048 2SA1115 2SC2458 2SC2603
2SA1111 2SA1112 2SA1306 2SC2591 2SC2591 2SC2592 2SC3298
2SC2773 2SC2774
2SB528
TA7302P
M5236C M5278L56
2SA1169 2SA1170
BA634
1:OUTPUT 2:GND 3:INPUT
L78N09 L78N12 L78N15
TD6104P
TA7317P
1:INPUT 2:GND 3:OUTPUT
DT5C144E
M5218L M5220L
μPC1282CA BA-6148 HA12412 LA1247 LA3400 LC4966
LC7817 M51321P TC4022BP TC9157AP TC9157P TD6301AP
MV103
Dot or Slit or Line
CTM-22S
STK3122-3 STK3152-3
CTM-22R
05Z2.4-X 05Z5.1-Y 05Z20-Y 05Z24-Y 05Z24-Z
FCC66M KV1226
2SK192A-GR 2SK192A-Y
SEL2210S TLS-123
2SK117-GR 2SK117-Y 2SK163-K2 2SK163-L1
1N60PSP 1S1588TP-3 1S2473T77 10E-2 OA90M
TA78

——— FM Signal Line
– – – AM Signal Line

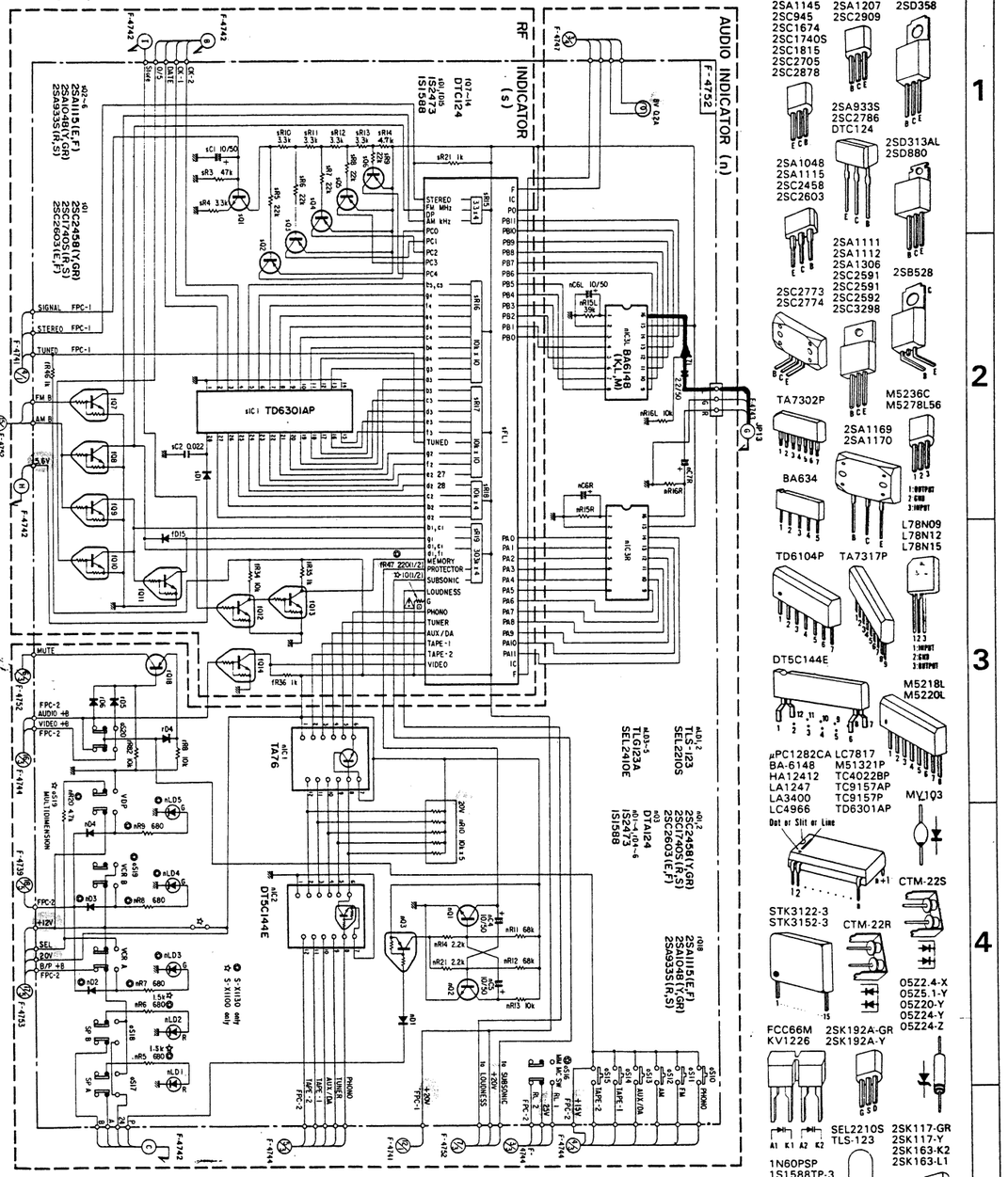
7-4. PLL Synthesizer & Control Section



- Design and specifications subject to change without notice for improvement.
- La présention et les spécifications sont susceptibles d'être modifiées sans préavis par suites d'améliorations éventuelles.
- Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.

7-5. Display Section

* Design and specifications subject to change without notice for improvement.
* La présention et les spécifications sont susceptibles d'être modifiées sans préavis par suites d'améliorations éventuelles.
* Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.



7-6. Video & Multidimention Section

*Design and specifications subject to change without notice for improvement.
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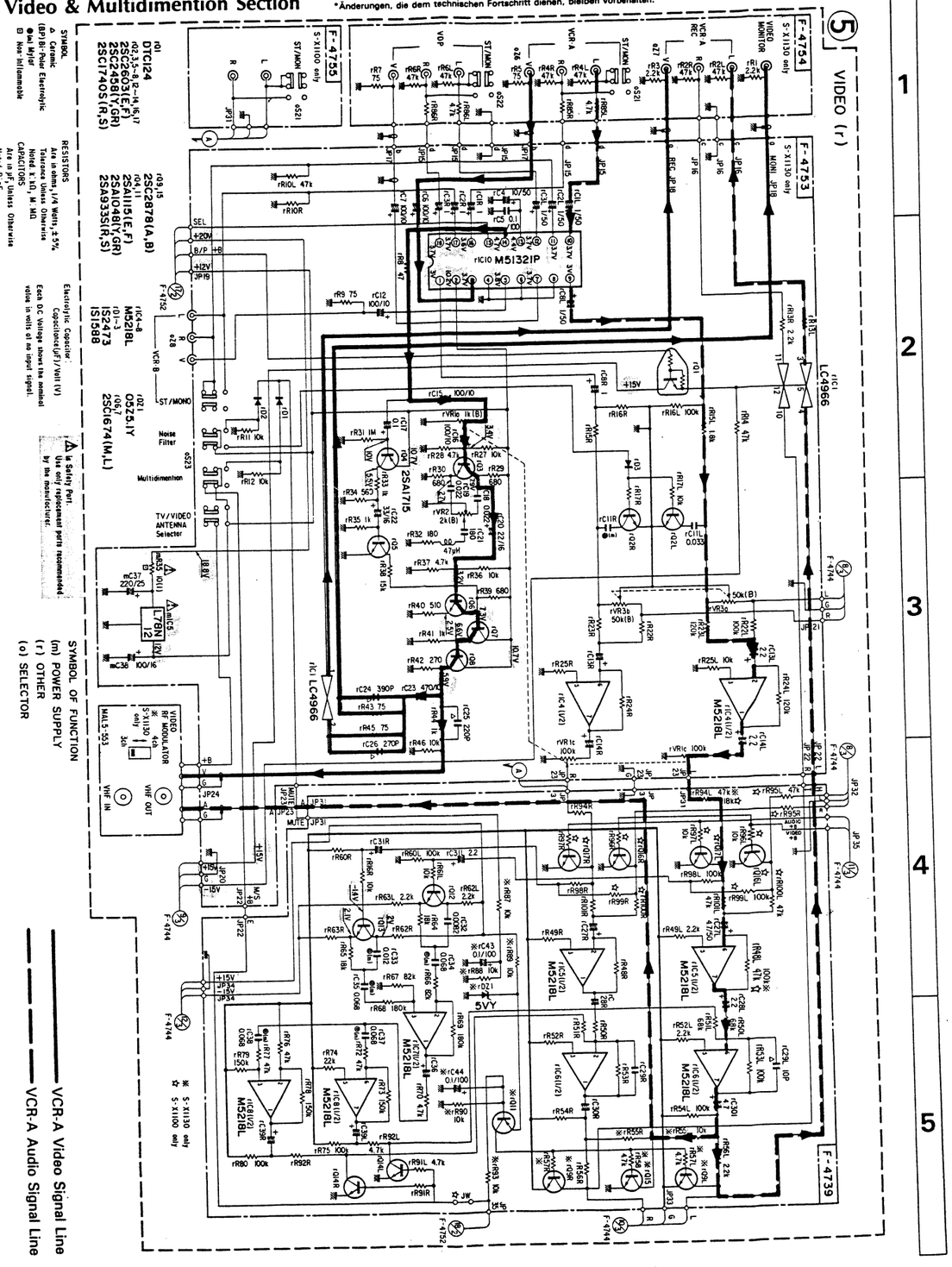
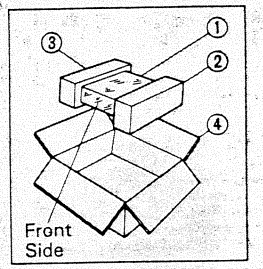
*Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.



8. PACKING LIST

Parts No.	Stock No.	Description
1	91167720	Vinyl Bag
2	47694800	Styrofoam Packing (Right)
3	47694700	Styrofoam Packing (Left)
4	47694300	Carton Case (S-X1130-Silver Model)
	47694200	Carton Case (S-X1130-Black Model)
	47694500	Carton Case (S-X1100-Silver Model)
	47694400	Carton Case (S-X1100-Black Model)



9. ACCESSORY LIST

Stock No.	Description
46051700	FM Antenna
46145700	AM Loop Antenna
07563000	Antenna Holder
48111100	VHF Antenna Cord with connector (S-X1130 only)
46961500	Operating Instruction (S-X1130)
46961600	Operating Instruction (S-X1100)

Sansui

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